

## REMARKS

Applicant respectfully requests reconsideration and continued examination of this application, particularly in view of the following remarks. After entry of the present amendments, claims 1-40 are pending in this application.

### 1. **Status of the Claims**

Claims 1, 16 and 29 have been amended. Support for these amendments is found in the specification at page 7 lines 19-23 and FIGS. 2-9.

### 2. **Prior Art Rejections**

Claims 1-2, 5-8, 10-17, 20-22, 24-29, 33-36, and 38-40 were rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,326,032 to Richter et al. (Richter) in view of U.S. Patent No. 5,368,828 to Carlson (Carlson). Claims 3-4, 9, 18-19, 23, 31-32 and 37 were rejected under 35 U.S.C. § 103(a) as being obvious over Richter in view of Carlson and in further view of U.S. Patent No. 4,566,251 to Spisak (Spisak). Applicant respectfully traverses these rejections for the reasons set forth below.

Neither Richter, Carlson nor Spisak, alone or in combination, teach or suggest introducing atomized sterilizing agent onto the interior surface of a bottle having an opening which prevents direct impingement of the particles onto portions of the interior bottle surface as recited in claims 1-40. Richter has no disclosure whatsoever regarding atomized particles. Richter's teaching that applied sanitizing agent floods the bottle interior actually teaches away from the "thin liquid film" recitation of the present claims. Richter, col. 11 lines 32-37. ✓

Carlson discloses a method of applying sterilizing agent directly to a container interior surface. The Carlson container is tube-shaped with a closed bottom and an open top which enables the sanitizing agent to be applied uniformly onto the container interior surface. Carlson, col. 2 lines 45-50, col. 3 lines 8-20. The full-cone spray pattern of the Carlson nozzle has direct line-of-sight access to the entire interior surface

of each container and provides a uniform coating of the hydrogen peroxide solution on the sidewalls and bottom of the carton. *Id.* at col. 3 lines 17-18, FIG. 1. This is contrary to the present invention wherein the reduced size bottle opening obstructs the path between portions of the bottle interior and the sterilizing agent source. Carlson, therefore, has no teaching or suggestion that atomized particles are prevented from directly impinging upon at least a portion of the bottle interior surface as recited in claims 1-40 or of a method and system that solves such a problem. ✓

Spisak teaches introducing a carton into a chamber saturated with high temperature sanitizing vapor. The thermal gradient between the vapor and the container enables the high temperature vapor to condense on the container. Spisak, col. 5 lines 10-20. Spisak has no teaching or suggestion that particles are prevented from directly impinging upon the bottle interior surface. This is particularly apparent as the Spisak tube-shaped, open-top container provides no impediment to direct sanitizer contact. Spisak, col. 3 lines 5-6. ✓

Moreover, neither Richter, Carlson nor Spisak, alone or in combination, teach or remotely suggest applying sterilizing agent to an inverted bottle as recited in claims 16-40. ✓ Richter teaches that the containers are upright when sanitized as the containers are emptied after sufficient contact with the sanitizer. Richter, col. 4 lines 35-45. Carlson likewise teaches that upright containers are treated with sterilizing agent. Carlson, col. 3 lines 8-20, FIG. 1. Spisak teaches that upright containers are treated with sanitizer as the containers are subsequently inverted to drain condensate therefrom. Spisak, col. 5 lines 10-28.

One advantage of the present invention is that only very small amounts of sterilizing agent are necessary to sanitize an entire bottle of the type having interior surface portions obstructed from direct impingement from an atomized sanitizing agent source located exteriorly of the bottle. Such a system and method is not taught or suggested by the prior art.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached pages are captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE.**"

**CONCLUSION**

In conclusion, pending claims 1-40 are allowable and an early indication of allowance is solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'J. D. Ryndak', is written over a horizontal line.

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**In the Claims**

Please amend the claims as follows.

1. (Twice Amended) A bottle sterilizing system [for sterilizing bottles, said bottles having an interior and exterior surface,] comprising:

a plurality of bottles, each bottle having an interior and exterior surface, a body portion and an opening, said opening having a width smaller than the width of the body portion that prevents introduction of particles from a source located exteriorly of the bottle from impinging directly on at least a portion of the interior surface of each bottle;

a source of a liquid sterilizing agent;

means for introducing said sterilizing agent onto the interior surface of said bottle from a location exterior of said bottle in the form of discrete atomized liquid particles by contacting the bottle surface with said particles to form at least a thin liquid film thereon, present in sufficient concentration to substantially eliminate microbial contamination on the surface of said bottle after being in contact with said liquid film for a sufficient period of time; and

means for substantially removing said sterilizing agent from said bottle surface after said bottle is sterilized as desired.

16. (Twice Amended) A bottle sterilization process [method for sterilizing ]  
 bottles, said bottles having interior and exterior surfaces,] comprising: 1  
providing at least one bottle having an interior and exterior surface, a body 3  
portion and an opening, said opening having a width smaller than the width of the body 4  
portion that prevents introduction of particles from a source located exteriorly of the 5  
bottle from impinging directly on at least a portion of the interior surface of each bottle; 6  
 introducing a sterilizing agent in the form of discrete atomized liquid particles 7  
from a location exterior of said bottle onto the interior bottle surface; 8  
 contacting the bottle surface with said particles whereby said particles form a thin 9  
 liquid film on the entire interior bottle surface; 10  
 maintaining the sterilizing agent on the surface of said bottle for a fixed period of 11  
 time sufficient to reduce to a desired level the amount of active microorganisms on said 12  
interior surface; [and] 13  
 removing said sterilizing agent from substantially all the interior and exterior 14  
 surfaces after said surfaces are sterilized as desired; and 15  
maintaining the bottle in an inverted position throughout the entire sterilization 16  
process. *new matter* 17

29. (Twice Amended) A [An] bottle sterilization apparatus [for sterilizing  
 bottles, said bottles having interior and exterior surfaces,] comprising:

at least one bottle having an interior and exterior surface, a body portion and an opening, said opening having a width smaller than the width of the body portion that prevents introduction of particles from a source located exteriorly of the bottle from impinging directly on at least a portion of the interior surface of said bottle;

a conveyor for moving said bottle in an inverted position;

a source of a liquid sterilizing agent in the form of atomized liquid particles;

at least one nozzle disposed under said bottle for introducing said sterilizing agent from a location exterior of said bottle onto the surface of the bottle in the form of discrete atomized liquid particles by contacting the bottle surface with said particles to form at least a thin liquid film thereon, present in sufficient concentration to substantially eliminate microbial contamination on the surfaces of said bottle in contact with said liquid film; and

a rinsing device for substantially removing said sterilizing agent from said bottle surfaces after said bottle is sterilized as desired.